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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)			Complete if Known		
			Application Number	10/820,864	
			Filing Date	April 9, 2004	
			First Named Inventor	Garg, et al.	
			Art Unit	1762	
Examiner Name					
Sheet	1	of	2	Attorney Docket Number	06357P USA

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
/BC/		US- 5,521,120	05-28-1996	Nulman, et al.	
/BC/		US- 6,423,201 B1	07-23-2002	Mandrekar	
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FOREIGN PATENT DOCUMENTS						
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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
/BC/		60258471	12-20-1985	Shiotani Yoshimi	(Abstract)	
		WO 00/71550 A1	11-30-2000	Xu, et al.		
		EP 1 142 894 A2	10-10-2001	Morman, et al.		
		EP 1 029 943 A1	08-23-2000	Harada		
/BC/		EP 0 818 559 A2	01-14-1998	Danek, et al.		

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				Application Number	10/820,864
				Filing Date	April 4, 2004
				First Named Inventor	Garg, et al.
				Art Unit	1762
				Examiner Name	
Sheet	2	of	2	Attorney Docket Number	06357P USA

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
/BC/		MARCADAL, C., et al., "CVD Process for Copper Interconnection", Microelectronic Engineering 37/38 (1997), pp. 97-103	
		JOSWIG, H., et al., "Improved Performance of Tin-Diffusion Barriers After a Post-Treatment", VMIC Conference, June 12-13, 1990, p. 477	
		WANG, M. T., et al., "Barrier Properties of Very Thin Ta and TaN Layers Against Copper Diffusion", J. Electrochem. Soc., Vol. 145, No. 7, July 1998, pp. 2538-2545	
		ZHANG, JIMING, et al., "CVD Cu Process Development and Integration for Sub-0.18 μ m Devices", Mt. Res. Soc. Symp. Proc., Vol. 564, 1999, pp 243-249	
/BC/		JAIN A., et al. "Process Development, Film Characterization, and Integration of PECVD W ₂ N as a Diffusion Barrier for Copper Interconnect", SANDHU, GURTEJ S., "Advanced Metallization Conference in 1998 (AMC 1998), Materials Research Society, pp. 305-311	

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			Application Number		
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			First Named Inventor	Diwakar Garg, et al.	
			Art Unit		
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		Number-Kind Code ² (if known)			
/BC/		US- 5,019,531	5/28/1991	Nobuyoshi Awaya, et al.	
		US- 5,085,731	2/4/1992	J. A. T. Norman, et al.	
		US- 5,242,860	9/7/1993	J. Nulman, et al.	
		US- 5,434,044	7/18/1995	J. Nulman, et al.	
		US- 5,521,120	5/28/1996	J. Nulman, et al.	
		US- 6,165,555	12/26/2000	C. H. Jun, et al.	
/BC/		US- 6,423,201 B1	7/23/2002	T. Mandrekar	
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		Country Code ³ Number ⁴ Kind Code ⁵ # (known)				
/BC/		JP 2000219968 A		Japan		✓
		JP 96127870 A		Japan		✓
		WO 00/71550 A1		World		✓
		WO 99/00830		World		✓

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/BC/		E. T. Eisenbraun, et al., "Enhanced Growth of Device-Quality Copper by Hydrogen Plasma-Assisted Chemical Vapor Deposition," Appl. Phys. Lett. 60 (25), pp. 3126-3128 (1992).	✓	
		H. J. Jin, et al., "Plasma-Enhanced Metal Organic Chemical Vapor Deposition of High Purity Copper Thin Films Using Plasma Reactor with the H Atom Source," J. Vac. Sci. Technol. A 17(3), pp. 726-730 (1999).	✓	
		S. K. Lakshmanan, et al., "A Novel Model of Hydrogen Plasma Assisted Chemical Vapor Deposition of Copper," Thin Solid Films 338, pp. 24-39 (1999).	✓	
		J. A. T. Norman, et al., "Chemical Additives for Improves Copper Chemical Vapor Deposition Processing," Thin Solid Films 262, pp. 46-51 (1995).	✓	
		G. A. Petersen, et al., "Enhanced Chemical Vapor Deposition of Copper from (hfac)Cu(TMVS) Using Liquid Coinjection of TMVS," J. Electrochem Soc., Vol. 142, No. 3, pp. 939-944 (1995).	✓	
		A. V. Gelatos, et al., "Chemical Vapor Deposition of Copper from Copper ⁺¹ Precursors in the Presence of Water Vapor," Appl. Phys. Lett. 63 (20), pp. 2842-2844 (1993).	✓	
		S-W K., et al., "(hfac)Cu(I)(MP) (hfac=hexafluoroacetylacetonate, MP=4-methyl-1-pentene) and (hfac)(Cu(I)(DMB) (DMB=3,3-dimethyl-1-butene) for the Chemical Vapor Deposition of Copper Film," Thin Solid Films, pp. 10-13 (1999).	✓	
		E. S. Hwang, et al., "Surfactant-Catalyzed Chemical Vapor Deposition of Copper Thin Films," Chem Mater. 12, pp. 2076-2081 (2000).	✓	
		T. Nguyen, et al., "Stress and Adhesion of CVD Copper and Tin," Mat. Res. Soc. Symp. Proc. Vol. 356, pp. 859-862 (1995).	✓	
		R. Kröger, et al., "Nucleation and Growth of CVD Cu Films," Mat. Res. Soc. Symp. Proc. Vol. 564, pp. 237-241 (1999).	✓	
		R. Kröger, et al., "Properties of Copper Films Prepared by Chemical Vapor Deposition for Advanced Metallization of Microelectronic Devices," Journal of The Electrochemical Society, 146 (9), pp. 3248-3254 (1999).	✓	
		M. Juppo, et al., "Deposition of Copper Films by an Alternate Supply of CuCl and Zn," J. Vac. Sci. Technol. A 15(4), pp. 2330-2333 (1997).	✓	
		P. Martensson, et al., "Atomic Layer Epitaxy of Copper," J. Electrochem. Soc., Vol. 145, No. 8, pp. 2926-2931 (1998).	✓	
		R. Solanki, et al., "Atomic Layer Deposition of Copper Seed Layers," Electrochemical and Solid-State Letters, 3(10), pp. 479-480 (2000).	✓	
		K. Holloway, et al., "Tantalum as a Diffusion Barrier Between Copper and Silicon: Failure Mechanism and Effect of Nitrogen Additions," J. Appl. Phys. 71 (11), pp. 5433-5444 (1992).	✓	
		M. H. Tsai, et al., "Comparison of the Diffusion Barrier Properties of Chemical-Vapor-Deposited TaN and Sputtered TaN between Cu and Si," J. Appl. Phys. 79 (9), pp. 6932-6938 (1996).	✓	
/BC/		B. Mehrotra, et al., "Properties of Direct Current Magnetron Reactively Sputtered TaN,"	✓	

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/BC/		J. Vac. Sci. Technol. B5 (6), pp. 1736-1740 (1987).	
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		B. H. Weiller, "CVD of Titanium Nitride for Electronic Applications: Gas Phase Chemical Kinetics for Fundamental Principles and Modeling," Electrochemical Society Proceedings, Vol. 96(5), pp. 231-238.	✓
		T. Q. Li, et al., "Initial Growth and Texture Formation During Reactive Magnetron Sputtering of TiN on Si(111)," J. Vac. Sci. Technol. A 20(3), pp. 583-588 (2002).	✓
		G. S. Chen, et al., "Evaluation of Radio-Frequency Sputter-Deposited Textured TiN Thin Films as Diffusion Barriers Between Copper and Silicon," J. Vac. Sci. Technol A 20(2), pp. 479-485 (2002).	✓
/BC/		A. Bouteville, et al., "Low Temperature Rapid Thermal Low Pressure Chemical Vapor Deposition of (111) Oriented TiN Layers from the TiCl ₄ -NH ₃ -H ₂ Gaseous Phase," Microelectronic Engineering 37/38, pp. 421-425 (1997).	✓

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